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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/921,078	08/02/2001	Chien Fang	112025-0456	9689
24267	7590	03/30/2006	EXAMINER	
CESARI AND MCKENNA, LLP			PARK, JUNG H	
88 BLACK FALCON AVENUE			ART UNIT	
BOSTON, MA 02210			PAPER NUMBER	
			2616	

DATE MAILED: 03/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/921,078

Applicant(s)

FANG ET AL.

Examiner

Jung Park

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-20 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Abstract Objections

1. The abstract of the disclosure is objected to because applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited.

In the first Office Action, the examiner suggested modifying the abstract since the abstract is too long (about 236 words), but there is no appropriate correction in the amendment filed on January 20, 2006.

Appropriate correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3 and 5-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon et al. (U.S. 6,333,917; hereinafter "Lyon") in view of Bonomi et al. (U.S. 6,069,872, hereinafter "Bonomi").

Regarding claims 1, 9, 13, 19, and 20, Lyon discloses the switches of claims 1 & 9, the method of claim 13, the computer readable media of claim 19, and the electromagnetic signals of claim 20. Lyon discloses,

- "a switching fabric (*Fabric 46 fig.4*) receiving a cell at an input port (*52 fig.4*), but not "the switching fabric selecting a route there-through for the cell to an output port";
- "at least one queue (*54 fig.4*; "*queues*" *fig.2*; "*queue*" *fig.1*) within the switching fabric, the queue having an associated threshold (*14 fig.1 where max_{th} and min_{th}*), the switching fabric determining the number of cells present in the queue ("*instantaneous occupancy*" *fig.1 where the average number of cells based on the instantaneous is determined as described col.1, lines 57-58*), the switching fabric determining if the next arriving cell (*col.1, ln.59 where ...a packet arrives*) for the at least one queue fills the queue above the threshold (*col.2, ln.1-2 where ...exceed the maximum threshold*), and in the event that the at least one queue is filled above the threshold (*col.2, ln.1-2 where ...exceed the maximum threshold*), then writing a flag bit within the cell (*col.1, ln.63 where ...using EFCI in ATM cell*) to a set state (*col.2, ln.2 where ...arriving packet are marked*);
- "a traffic manager (*RED+ Engine 62 fig.4*; *74 fig.5*) for computing a ratio of cells having the flag bit set to a total number of cells received at an output port (*62 fig.4; col.8, lines 61-66*; *74 fig.5 where RED+ engine determines a ratio of tagging cells*) and in response to a value of the ratio either discarding the cell or forwarding the cell (*col.8, ln.66 where ...dropping or tagging cells for forwarding*) into an output link of the computer network (as shown in *fig.4*), the discarding step selecting a cell to be discarded on a random basis (*62 fig.4 where RED+ engine uses the random early detection algorithm for discarding/tagging cells*) ."

Although Lyon teaches a switching fabric ("*Fabric*" *fig.4*) receiving a cell at an input port and transmitting the cell through an output port, Lyon does not explicitly teach the switching fabric selecting a route there-through for the cell to an output port. However, Bonomi teaches, "the switching fabric selecting a route there-through for the

cell to an output port (Bonomi, 86 & 88 fig.2; col.5, ln.49-51 where the switch fabric determines an appropriate route path for incoming cells)."

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to add input and output ports for the purpose of having the plurality of input/output modules. A motivation of having the plurality of input modules is to convert the incoming data packets and break them down into individual ATM cells in order to process a variety of incoming ATM cells from the input modules to input ports.

Regarding claims 3, 8, 10, 11, 14 and 17, Lyon further discloses, "the flag bit further comprises: an EFCI bit of the ATM cell (col.5, ln.65-67 where ...an EFCI bit of the ATM cell having a fixed length cell).

Regarding claims 5 and 12, Lyon lacks what Bonomi discloses, "an IP linecard, the IP linecard receiving TCP/IP computer packets from a computer network and forwarding ATM cells to the switching fabric (Bonomi, col.5, lines 41-43)."

It would have been obvious to one of ordinary skill in the art at the time of invention was made to add the IP linecard for the purpose of processing Ethernet packets. A motivation of processing Ethernet packet is to convert the incoming IP data packets and break them down into individual ATM cells in order to process Ethernet packets since TCP/IP protocol is widely used communication protocol between computers today, used as a standard for transmitting data over networks and as the basis for standard Internet protocols.

Regarding claim 6, Lyon lacks what Bonomi discloses, "an IP linecard, the IP linecard receiving ATM cells from the switching fabric and forwarding TCP/IP computer packets onto a computer network (Bonomi, 84 fig.2; col.5, lines 66-67 *where ATM cells are transmitted out through an IP module connected to TCP/IP network*).² Therefore, this claim is rejected for the similar reasons and motivation set forth in the rejection of claim 5.

Regarding claims 7 and 16, they are claims corresponding to claims 1 & 5 and are therefore rejected for the similar reasons set forth in the rejection of claims 1 and 5.

Regarding claims 15 and 18, Lyon further discloses, "using a RED algorithm computational method to select the fixed length segment to be discarded on a random basis (62 fig.4 *where RED engine uses the random early detection algorithm for discarding/tagging cells*).²

Regarding claims 19 and 20, Lyon-Bonomi discloses all the claim limitations as stated above, except for a computer readable device and electromagnetic signal containing instructions.

However, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention was made to use software-based machines. The benefit using computer-readable device is that program can be changed and upgraded and new features are added easily than hardware changes.

4. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon in view of Bonomi and further in view of The Admitted Prior Art (hereinafter "APA").

Regarding claims 2 and 4, Lyon in view of Bonomi teach that the traffic manager, "RED engine", is included in the switch fabric. However, Lyon and Bonomi lack what APA discloses, "an ASIC chip having the traffic manager implemented therein (APA, pg. 1, lines 24-25 *where the switch fabric is implemented in a few ASIC chips*)."

It would have been obvious that it was well known in the art that the switch fabric is implemented in the computer chips such as ASIC. A motivation of using ASIC chips is to improve performance over general-purpose CPUs, because ASICs are "hardwired" to do a specific job and do not incur the overhead of fetching and interpreting stored instructions.

Response to Arguments

5. Applicant's arguments filed January 20, 2006 have been fully considered but they are not persuasive.

At page 12, applicant argues that Lyon does not teach, "the switching fabric selecting a route there-through for the cell to an output port ... the switching fabric determining the number of cells present in the queue, the switching fabric determining if the next arriving cell for the at least one queue fills the queue above the threshold, and in the event that the at least one queue is filled above the threshold, then writing a flag bit within the cell to a set state ... a traffic manager for computing a ratio of cells having the flag bit set to a total number of cells received at an output port and in response to a value of the ratio either discarding the cell or forwarding the cell into an output link of the computer network, the discarding step selecting a cell to be discarded on a random basis" recited in claim 1. In further detail, in applicant's claimed invention, each cell is identified by writing a flag bit within the cell to a "set" state when any queue is filled

above the threshold. Additionally, the traffic manager computes a ratio of cells having the flag bit set to a total number of cells received at an output port.

In reply, Lyon teaches all the claim limitations recited in claim 1 (see rejection for claim 1). In further details, Lyon teaches that each cell is identified by writing a flag bit within in the cell (col.1, ln.63; col.5, ln.62-67 where ...tagging ATM cells using EFCI bits in the ATM cell) to a set state when any queue is filled above the threshold (col.2, ln.1-2 where ...if the queue size exceeds the maximum threshold, all arriving packets are marked). Additionally, the enhanced RED engine (traffic manager) computes a ratio of cells having the flag bit set to a total number of cells received (col.8, ln.64-65 where ...determine the frequency of tagging packets. That is, the tagged cells using EFCI bit / total cells received) at an output port (as shown in figure 4). Therefore, the examiner respectfully disagrees.

At page 13, applicant argues that Lyon is totally silent on determining on the fly rate for discarding packets. Additionally, Bonomi does not describing using, "a traffic manage for computing a ratio of cells having the flag bit set to a total number of cells received at an output port and in response to a value of the ratio either discarding the cell or forwarding the cell into an output link of the computer network, the discarding step selecting a cell to be discarded on a random basis."

In reply, Lyon teaches that a traffic manager (*RED+ Engine 62 fig.4; 74 fig.5*) for computing a ratio of cells having the flag bit set to a total number of cells received at an output port (*62 fig.4; col.8, lines 61-66; 74 fig.5 where RED+ engine determines a ratio of tagging cells*) and in response to a value of the ratio either discarding the cell or forwarding the cell (*col.8, ln.66 where ...dropping or tagging cells for forwarding*) into an

output link of the computer network, the discarding step selecting a cell to be discarded on a random basis (62 fig.4 where RED+ engine uses the random early detection algorithm for discarding/tagging cells). Therefore, the examiner respectfully disagrees.

At page 13, applicant argues that Lyon-Bonomi's patents are legally insufficient to render the presently claimed invention obvious 35 U.S.C. §103.

In reply, since Lyon and Bonomi teach all the claim limitations recited in claim 1, it is legally sufficient to reject the claimed invention obvious under 35 U.S.C. §103. Therefore, the examiner respectfully disagrees.

At page 14, applicant argues that claims 2 and 4 were rejected under U.S.C. §103 which are dependent claims of claim 1. In reply, the independent claim was rejected under U.S.C. §103 and therefore, the dependent claims 2 and 4 are rejected as being unpatentable over Lyon in view of Bonomi and further in view of "the Admitted Prior Art."

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

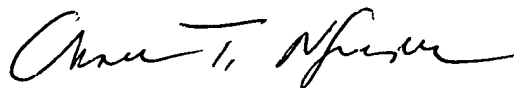
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jung Park whose telephone number is 571-272-8565. The examiner can normally be reached on Mon-Fri during 7:10-4:40.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on 571-272-3126. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JP

Jung Park
Patent Examiner
Art Unit 2616
March 22, 2006



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